How did the Moon form?

KS2 KS3 Ages 7-14 ⏰ 2 min read

Around 4.5 billion years ago, when Earth was still a baby planet, something absolutely massive smashed into it. This wasn't just any old asteroid — it was roughly the size of Mars and scientists have nicknamed it **1**. The collision was so catastrophic that it makes every disaster movie look like a gentle tap.

The Great Cosmic Collision

When Theia hit Earth, the impact was unimaginable. Both planets were completely destroyed in the crash, turning into a swirling cloud of molten rock, metal, and superhot gas. The temperature soared to thousands of degrees — hot enough to melt absolutely everything. For a while, there wasn't really an Earth or a Theia anymore, just this massive blob of liquid rock spinning through space.

Think of it like throwing two balls of clay together as hard as you possibly can. They don't just bounce off each other — they splatter and merge into one messy, spinning lump. Except these "clay balls" were entire planets, and the "mess" was hot enough to glow like the Sun.

Birth of the Moon

As this molten mess spun around, something remarkable happened. The heavier materials, mostly iron, sank toward the centre to form Earth's core. But some of the lighter, rocky material got flung outward by the spinning motion, forming a ring of debris around the newly-forming Earth. Over time, this ring of hot rock began to clump together, gradually building up into our Moon.

This process wasn't quick — it took millions of years for the Moon to fully form from this cosmic debris ring. During this time, both Earth and the Moon were still glowing hot from the impact, looking more like small stars than the rocky worlds we know today.

The Evidence

How do we know this wild story is true? The biggest clue came from the Moon rocks that astronauts brought back during the Apollo missions. When scientists studied these samples, they discovered something fascinating: Moon rocks are chemically very similar to Earth rocks, but they contain almost no iron. This makes perfect sense if the Moon formed from the lighter materials that got blasted away during the collision.

The Moon is still moving away from us today, drifting about 4 centimetres further each year — a lasting reminder of that ancient cosmic crash that created our celestial companion.